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Imaging quantum interference patterns on a quantum point contact[1] CARLO DACUNHA, NOBUYUKI AOKI[2], DAVID FERRY, Arizona State University — Scanning gate microscopy (SGM) images have been taken inside the constriction of a quantum point contact (QPC) fabricated on an $In_{0.53}Al_{0.47}As/In_{0.53}Ga_{0.47}As$ heterostructure. Shubnikov-de Haas measurements revealed the occupation of two sub-bands on this sample with carrier concentrations of $7.24x10^{11}cm^{-2}$ and $2.42x10^{11}cm^{-2}$, respectively. The images show the behavior of the wavefunction interference at different points of the transmission curve of the QPC. It is believed that these images correspond to different resonance peaks observed on the curve. Additional images have been taken at different temperatures indicating a reduction of the clear interference patterns, which is attributed to a decrease of the phase coherent area of the sample.

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